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REPORT
100-111

THE ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND DEMONSTRATION AUTHORIZATION ACT OF 1987

MAY 28, 1987.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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Mr. ROE, from the Committee on Science, Space, and Technology, submitted the following

REPORT

[To accompany H.R. 2355]

[Including Congressional Budget Office cost estimate]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 2355) to authorize appropriations for environmental research, development, and demonstration for the fiscal years 1988 and 1989, and for other purposes, having considered the same, report favorably thereon with amendments and recommend that the bill, as amended do pass.

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The amendments are as follows:

AMENDMENTS—H.R. 2355

The amendments, referenced to page and line numbers of the introduced bill, are as follows:

91-006

H703-6

1. On page 3, line 11, amend "$56,611,900" to read "$52,611,900".
2. On page 11, line 22, add the following at the end of subsection (e):

The strategy shall provide funding levels and implementation timelines for each program proposed.

3. On page 12, add the following paragraph after line 6:

(g) Within 180 days after enactment of this Act, the Administrator shall prepare and submit to the Committee on Science, Space, and Technology in the House of Representatives and the Committee on Environment and Public Works in the Senate a report which (1) assesses the state-of-the-art in water resource aquatic plant management models and (2) determines the feasibility of updating the Agency's existing model.

I. Purpose of the Bill

The purposes of the bill are:

(1) To authorize appropriations for environmental research, development, and demonstration activities of the Environmental Protection Agency (EPA) for fiscal year 1988 and 1989;

(2) To expand the EPA's capability and emphasis in long-term environmental research;

(3) To provide program direction for EPA's research program; and

(4) To enhance the role of the Science Advisory Board in reporting to Congress on EPA's research needs and programs.

A summary of appropriation authorized in the bill by program media is as follows:

EPA RESEARCH AND DEVELOPMENT AUTHORIZATION FOR FISCAL YEARS 1988 AND 1989

	Fiscal year—	
	1988	1989
Program:		
Air quality	$65,462.8	$68,099.8
Water quality	24,665.4	25,689.1
Drinking water	23,929.5	24,570.8
Hazardous waste	45,236.8	48,151.7
Pesticides	13,690.2	14,596.3
Radiation	2,878.1	2,952.4
Interdisciplinary	23,905.9	26,202.4
Toxic substances	29,017.5	30,215.3
Acid rain	52,331.1	52,611.9
Energy	3,535.5	3,605.0
Support and management	9,796.4	10,414.6
Total	294,449.2	307,109.4

II. Committee Actions

The Subcommittee on Natural Resources, Agriculture Research and Environment held hearings on the fiscal year 1988 EPA request for research and development on April 1, 1987. Administra-

tion and public witnesses testified concerning research needs, funding, and priorities.

In response to those hearings, a draft bill authorizing appropriations for EPA's research programs for fiscal years 1988 and 1989 was prepared and presented to the Subcommittee for action on May 7, 1987. At that meeting, the Subcommittee ordered reported a clean bill to the full Committee by a unanimous voice vote. The bill, H.R. 2355, was introduced on May 8, 1987 by Chairman Scheuer. H.R. 2355 was considered and ordered reported, as amended, by the Committee on Science, Space, and Technology on May 13, 1987.

As ordered reported, H.R. 2355 authorizes $294,449,200 for fiscal year 1988 and $307,109,400 for fiscal year 1989 for EPA research programs. Authorizations for Superfund research are not included because such programs were separately authorized for five years under the Superfund Amendments and Reauthorization Act. The total funds authorized for fiscal year 1988 are equal to the President's fiscal year 1988 request, which represents a $11 million decrease from current fiscal year 1987 estimated levels. The total fiscal year 1989 authorization represents a 4.3% increase over the fiscal year 1988 authorized levels to account for inflation.

In addition to program authorizations, H.R. 2355 contains provisions intended to provide guidance on EPA's research program, including a mandate for EPA to conduct and support long-term environmental research at the nation's universities in addition to conducting research for immediate regulatory needs; provisions expanding the role of the Science Advisory Board in providing evaluations of EPA's research programs to Congress; a requirement for EPA to conduct a detailed assessment of its scientific staffing needs; and direction to carry out several research studies, including research on air toxics in the Great Lakes region and new ways to reduce the generation of hazardous waste.

III. Background and Need for the Legislation

The Committee on Science, Space, and Technology has adopted the practice of authorizing the research and development programs of the Environmental Protection Agency as a means of ensuring that the program is well managed and supportive of the Agency's primary role of protecting public health and welfare. In addition to providing research program authorizations of appropriations, the research authorization bills provide substantive program direction to ensure that the Agency has an adequate scientific basis for its regulatory programs.

A. EPA's Research Program

EPA's Office of Research and Development (ORD) is responsible for EPA's in-house and extramural research programs. ORD accounts for about twenty percent of EPA's total operating budget. Most of EPA's in-house research expertise resides in its laboratories and field stations. However, about two-thirds of EPA's research is extramural. EPA carries out its extramural research program through grants, contracts, and cooperative agreements with universities, consultants and private research contractors. Funds for

EPA's in-house research program and its extramural research program are separately appropriated, with funds for in-house research coming from the Agency-wide salaries and expenses appropriation account, and funds for the extramural program coming from the research and development appropriation account.

EPA's research program is intended to support the Agency's regulatory mission under various environmental statutes, including the Clean Air Act, the Clean Water Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Safe Drinking Water Act, and the Superfund Amendments and Reauthorization Act. EPA's research agenda is planned by five research committees which include representatives from the program offices directly responsible for regulation. The planning process is intended to ensure that the research is responsive to the particular needs of the regulatory offices.

Excluding Superfund research, which has been separately authorized, the Administration requested a total of $294,449,200 for fiscal year 1988 research and development programs, a decrease of $11,062,000, or 3.6 percent, from the current fiscal year 1987 levels. The budget request proposed a $2.4 million increase for in-house research and a $13.5 million reduction in the extramural portion of the research program. Total full-time personnel (FTEs) would decline slightly by 21 positions.

B. CONTINUED DECLINE IN RESEARCH SUPPORT

The Administration's fiscal year 1988 budget request for environmental research must be seen in the context of recent budget trends. In real terms, funding levels for EPA research have declined significantly during the last six years. After dramatic reductions in fiscal year 1982 and 1983, a trend of modest increases brought the total nominal funding proposed for fiscal year 1988 (including the $59 million Superfund research program) to a level only about two percent above the fiscal year 1981 level. Adjusted for inflation, however, the Administration's budget request is 26 percent below the fiscal year 1981 level. A request of $484.3 million—$131 million higher than the Administration's request—would have been necessary to equal the purchasing power of the fiscal year 1981 budget. Total full-time personnel have declined by 500 positions, or nearly twenty percent, since fiscal year 1980.

In addition, there have been significant shifts of funding *within* the research programs since 1980. In the fiscal year 1988 proposal, funding for acid rain research and Superfund research accounts for 32 percent of the total research budget ($114.4 million), leaving only $239.1 million for all remaining research. In fiscal year 1981, in contrast, there was $337.57 million available for research programs other than Superfund or acid rain. Growth in the Superfund and acid rain programs have clearly been at the expense of existing research programs, particularly in the area of water quality and energy. Indeed, adjusted for inflation, the budget for research, excluding Superfund and acid rain research, has decreased nearly 50 percent since fiscal year 1981.

Declining funding has particularly adversely affected the Agency's ability to acquire new scientific equipment to replace aging and outmoded equipment at EPA's labs. Since Congress appropriates in-house and extramural funds in separate accounts, EPA has little flexibility in shifting resources between in-house and extramural accounts as do other agencies. From the in-house appropriations account, EPA must pay not only personnel benefits and compensation, but also all other expenses related to running EPA's in-house research, such as rent, computers, lab equipment and other scientific research supplies. As a result of rising personnel costs, EPA has been forced to cut back on its purchases of modern lab equipment. From 1980 to 1985, scientific equipment funding has declined 43%.

The effects of declining investment in research, while difficult to quantify, have led many observers to believe that overall research resources are insufficient to meet regulatory and statutory needs. In particular, new research needs created by the major expansion of EPA's regulatory role with respect to toxic chemicals and hazardous wastes over the last ten years have not been met with increased research resources. As a result, the lack of solid scientific information has led to significant delays in decision-making and has forced policy-makers to make judgments in the face of substantial scientific uncertainty. Example of such delays include the lack of standards for hazardous air pollutants, drinking water contaminants, releases of biotechnology products, and groundwater protection.

C. SETTING RESEARCH PRIORITIES

Concerns have also recently been expressed about EPA's process for setting reserach priorities. EPA's research priorities are dictated largely by the pressing regulatory needs of the program offices. The program offices are seen as the user or client for ORD's completed research.

As noted by several witnesses, this arrangement has had several adverse effects. First, it has been difficult for ORD to carry out anything but short-term, applied research. Particularly in a time of shrinking total research resources, funds allocated to longer-term, more basic research have been frequently re-programmed by the Office of Management and Budget or the Agency to meet more urgent needs. Second, rapidly shifting regulatory priorities have prevented ORD from planning orderly multi-year research programs.

As a result, the focus of ORD's research often is too narrow. For example, ORD presently conducts little basic environmental research which could further the understanding of fundamental environmental processes and health effects. Yet a lack of basic knowledge in these areas is responsible for hindering effective, timely and cost-effective regulations. Major uncertainties remain about how toxic chemicals move, transform, and stay in the air, water, soil and groundwater. Lack of adequate information about the effects of pollutants on human health—particularly for non-cancer effects—hampers the Agency's ability to assess risks, issue appropriate standards and take enforcement action. By focusing solely

on short-term, applied research, EPA cannot reduce these uncertainties, and its ability to regulate pollution in a cost-effective and rational manner will continue to be compromised.

Similarly, by concentrating on research which meets pressing regulatory needs, ORD's research program fails to identify and assess new evironmental issues which may in fact pose far greater threats to the environment or to public health than issues which already have the Agency's attention. A recent report by 75 career staff at EPA, "Unfinished Business: A Comparative Assessment of Environmental Problems", confirmed this problem. Examples of those areas include indoor air, radon, stratospheric ozone depletion and climate change, and biotechnology.

Witnesses stressed that an effective environmental regulatory program ought to place priority on identifying and addressing the greatest environmental and public health threats. Assessing and comparing environmental threats is fundamentally a scientific enterprise, and the responsibility ought to lie in ORD to conduct such research. It is clear, however, that ORD presently relies on the program offices to identify research needs, and does not engage in the type of analysis which could enable it to influence agency priorities and research needs. Instead of science determining which environmental issues should be addressed with regulations, existing regulations are determining what scientific research should be conducted.

As discussed in detail below, H.R. 2355 addresses these issues by increasing funding support for EPA's in-house research program in FY 89 and by new requirements which are inteded to strengthen the role of basic research and improve the Agency's capacity to identify and assess environmental research needs.

IV. Explanation of the Bill

INTRODUCTION

The paragraphs that follow provide a section-by-section description of the content and purpose of the bill. Table 1 provides a summary of all appropriations that are authorized by this bill.

TABLE I.—EPA OFFICE OF RESEARCH AND DEVELOPMENT: SUMMARY OF AUTHORIZED APPROPRIATIONS

[In thousands of dollars]

Research program (by medium)	Fiscal year—		Fiscal year 1988—		Request versus H.R. 2355	Fiscal year 1989 H.R. 2355	Fiscal year 1989 versus fiscal year 1988 H.R. 2355
	1986 actual	1987 current estimate	Request	H.R. 2355			
Air quality	68,389.8	63,039.8	65,462.8	65,462.8	.....	68,099.8	2,637.0
Water quality	28,299.0	24,396.1	24,665.4	24,665.4	.....	25,689.1	1,023.7
Drinking water	23,321.4	24,001.4	23,929.5	23,929.5	.....	24,570.8	641.3
Hazardous waste	51,421.5	50,578.3	45,236.8	45,236.8	.....	38,151.7	2,914.9
Pesticides	11,649.5	12,535.3	13,190.2	13,690.2	500	14,596.3	906.1
Radiation	199.0	2,672.6	1,378.1	2,878.1	1,500	2,952.4	74.3
Interdisciplinary	27,109.2	27,921.3	22,905.9	23,905.9	1,000	26,202.4	2,296.5
Toxic substances	34,257.0	31,095.4	29,017.5	29,017.5	.....	30,215.3	1,197.8
Acid rain	47,842.9	55,446.8	55,331.1	52,331.1	(3,000)	52,611.9	280.8
Energy	5,652.2	4,100.6	3,535.5	3,535.5	.....	3,605.0	69.5

TABLE I.—EPA OFFICE OF RESEARCH AND DEVELOPMENT: SUMMARY OF AUTHORIZED APPROPRIATIONS—Continued

[In thousands of dollars]

Research program (by medium)	Fiscal year—		Fiscal year 1988—		Request versus H.R. 2355	Fiscal year 1989 H.R. 2355	Fiscal year 1989 versus fiscal year 1988 H.R. 2355
	1986 actual	1987 current estimate	Request	H.R. 2355			
Support and management	9,632.6	9,723.6	9,796.4	9,796.4		10,414.6	618.2
Total	307,874.1	305,511.2	294,449.2	294,449.2		307,109.4	12,660.2

The first column in Table 1 shows the appropriation for fiscal year 1986 while the second column indicates estimated spending in fiscal year 1987. Column three reflects the fiscal year 1988 budget request submitted by the President to Congress. The fourth column represents the Committee's fiscal year 1988 recommendations while column five shows the difference between the fiscal year 1988 authorization and the President's request. The sixth column indicates the Committee's authorization for fiscal year 1989, and the last column shows the difference between the fiscal year 1988 and fiscal year 1989 authorization levels.

A section-by-section description of the bill along with a discussion of the Committee's actions and views follow.

SECTION 1

The bill is cited as the "Environmental Research, Development and Demonstration Authorization Act of 1987."

SECTION 2

Section 2 of the bill provides for authorization of appropriations for the research program categories. Except where otherwise noted, these are the program categories used by EPA in developing its budget request.

The following paragraphs describe each of the research programs and the corresponding Committee actions for fiscal years 1988 and 1989. The discussion of individual programs is organized by the media identified in Table 1. There is a brief overview for each of the media followed by discussion of Committee actions.

SECTION 2(a)(1). AIR QUALITY

Description of program

This research program provides the research and technical support necessary to enable the Agency to carry out its regulatory and information transfer responsibilities under the Clean Air Act. The air quality research program provides scientific support for the development and review of National Ambient Air Quality Standards, New Source Performance Standards, State Implementation Plans, and regulations for hazardous air pollutants. The Air Quality research program also provides support for the mobile source regulatory program, and provides scientific data to determine the impact of the quality of global and micro-environments on public health and the environment.

Budget request

The total budget requested for this program for fiscal year 1988 was $65,462,800, supported by 436.7 full positions, an increase of $2,423,000, nearly 4 percent, from current fiscal year 1987 estimated levels. Within this funding proposal were a number of program changes.

The requested increase in funds supported expansion of initiatives begun in 1987 to understand the causes and effects of global climate change and the potential health implications of municipal waste incineration. Additional resources supported new initiatives to study the effects of ozone on forests and provide for EPA's participation in the next National Health and Nutrition Survey, a multi-year interagency effort to track the status of the nation's environmental health. Most other air research activities remained roughly level with current fiscal year 1987 levels, with the exception of a decrease in the air monitoring and quality assurance program, which declined from $175.5 to $15.7 million. The decrease reflected EPA's view that criteria pollutant quality assurance, and ambient and source monitoring methods, are sufficiently developed.

Committee action

The Committee provided a total fiscal year 1988 authorization of $65,462,000, equivalent to the President's budget request. For fiscal year 1989, the Committee has provided a total authorization of $68,099,800 for the air quality research program, and increase of $2,637,000, or 4 percent, above the Committee's fiscal year 1988 authorization level.

The Committee generally supports the priorities identified in the air quality budget request and has not redirected funds in the fiscal year 1988 request. In particular, the Committee supports the increased funding requested in fiscal year 1988 for the stratospheric modification research program and believes that research which focuses on potential human health and environmental effects of global warming and stratospheric ozone depletion is of high priority.

The fiscal year 1988 budget request proposed $2.5 million for indoor air research, a slight decrease over fiscal year 1987 levels. EPA's indoor air program is still in a stage of reorganization, following a review and report by the EPA's Science Advisory Board. The Committee concurs with the Science Advisory Board recommendation for EPA to conduct a relative risk assessment for the more important indoor air pollutants for the purpose of creating a framework for decision-making. The Committee will continue its close scrutiny of EPA's indoor air research program. The Committee is concerned about EPA delays in providing required reports and expects that EPA will submit its forthcoming report on indoor air pollution in a timely manner.

The Committee also strongly supports the proposed fiscal year 1988 increase in funding on environmental and health effects of municipal waste incineration. Increased restrictions on land and ocean disposal of waste have made incineration a more attractive disposal option, but there remain significant uncertainties about

environmental and health effects which urgently need to be studied before substantial investment in incineration is made.

In fiscal year 1989, the Committee has increased the salaries and expense portion of the air quality research program by 6.3 percent over the fiscal year 1988 levels in order to ensure a modest increase above inflation for EPA's in-house program. The Committee has also added $1 million to the extramural research and development account to support additional research on global warming, stratospheric ozone depletion, and indoor air quality.

While the Committee has not specifically designated funds for this purpose, the Committee encourages the EPA to increase research on the health effects of acid aerosols. The Science Advisory Board has noted that this issue "is likely to emerge as one of the more significant public health questions over the next several years, especially in relation to assessing the health risks of acid deposition."

SECTION 2(a)(2). WATER QUALITY

Description of program

The water quality research program supports the Agency's activities under the Federal Water Pollution Control Act. The program's objective is to develop the scientific data needed to support a water quality based approach to pollution control and environmentally sound ocean disposal, estuarine and Great Lakes programs, the program also evaluates innovative and alternative technologies, sludge management alternatives, and toxicity reduction methods and technologies.

Budget proposal

The fiscal year 1988 request was for $24,665,400 and 292 full time positions, an increase of $269,300 (about 1 percent) and a decrease of 4.9 workyears, from the fiscal year 1987 levels. Compared to fiscal year 1981, however, the fiscal year 1988 requested figure was $37.7 million (60 percent) less. Most programs would be funded roughly at the fiscal year 1987 level. The requested increase was for expanded research and wetlands and near coastal waters.

The budget request was submitted prior to the passage of the Water Quality Act of 1987 and therefore does not reflect any additional research resource needs generated by that Act. At the time of this Report, the Committee has not received any budget amendment or revised budget from the Administration to reflect the need for increased funds.

Committee action

The Committee agreed with the fiscal year 1988 request and authorized $24,665,400 for water quality research. For fiscal year 1989, the Committee authorized a total of $25,689,100, an increase of $1,023,700 from the fiscal year 1988 levels. The fiscal year 1989 increase reflects a 6.3 percent increase in the fiscal year 1988 in-house research program to support a modest increase over inflation.

The Committee also directed the Agency to conduct several water-related studies, discussed in detail under Section 7, below.

SECTION 2(a)(3). DRINKING WATER

Description of program

The drinking water research program provides support to States and the EPA Office of Drinking Water in implementing the Safe Drinking Water Act in the areas of contaminant occurrences and health effects, analytical methodology, control technology and related costs, and the protection of ground water resources. The objectives of the drinking water research program include the development of drinking water standards based on health effects through risk assessment studies, providing engineering technologies and monitoring data for drinking water standards, and providing scientific methods and data for protection of ground water resources.

Budget request

The Administration requested a total of $23,929,500 and 194.7 workyears for the fiscal year 1988 drinking water research program, a decrease of $71,900. Most of the research activities within the drinking water program would remain at level funding. According to EPA, the decrease is due to completion of studies on groundwater monitoring and on health effects.

Committee action

The Committee authorized total funding for fiscal year 1988 drinking water research at the level requested by the Administration. For fiscal year 1989, the Committee authorized funding of $24,570,800, an increase of $641,300 from fiscal year 1988 levels, reflecting a 6.3% increase in the in-house research program from fiscal year 1988 authorized levels.

While the Committee has not provided funds in addition to those requested by the Administration for fiscal year 1988, the Committee is concerned whether the resources for drinking water research programs are adequate to address the increased research needs created by the Safe Drinking Water Act Amendments ("Amendments") passed in 1986. In particular, the Amendments required EPA to issue new drinking water standards for 83 contaminants by June, 1989, and to set standards for an additional 25 by 1991. The size of this task is suggested by the fact that EPA has set standards for fewer than 25 contaminants since 1974.

One of the major functions of the drinking water research program is to develop quantitative human health risk assessments which are used in setting the health-based goals and regulatory standards. Despite the obvious need to increase risk assessment research to meet the statutory deadlines for issuing regulations, no increases in funding from fiscal year 1987 were requested. Indeed, while the regulatory program office has received a 38 percent increase in funding since fiscal year 85, the research budget has increased only 2.6 percent in the same period.

Reviewing the fiscal year 1988 budget request, the Science Advisory Board expressed concern that "an imbalance exists between the Agency's increased regulatory responsibilities and lack of a commensurate increase in research funds to support these responsibilities" and questioned whether the research resources would "at-

tract a critical mass of funding and staff to meet program commitments."

SECTION 2(a)(4). HAZARDOUS WASTE

Program description

The Resource Conservation and Recovery Act (RCRA) authorizes a regulatory program to identify those wastes which pose a substantial hazard to human health or the environment, and management standards sufficient to prevent such harm. Research in this program provides the scientific and engineering basis for characterizing and determining the extent of the problems and for formulating controls. The objectives of the research program are to develop data to support the use of alternative disposal technologies and the implementation of the land disposal and incineration regulations, to develop procedures to identify and measure chemicals in wastes and to prevent and contain hazardous release. The program also develops and evaluates tests and procedures for conducting risk assessments, conducts the assessment and control research related to dioxin, and provides quality assurance support for the hazardous waste program.

Budget request

A total of $45,236,800 and 233.5 workyears was requested for fiscal year 1988 for the hazardous waste research program, a decrease of $5,341,500 (10.6 percent) and 3.8 workyears from current fiscal year 1987 levels. Approximately half of the decrease is attributable to the elimination of funding for an integrated waste research program at Tufts University. The budget also proposes a $2.5 million decrease in control technology development due to the completion of engineering studies in support of the National Dioxin Strategy, a reduced land disposal research program, and a reduction on studies on oil spill controls.

Some of the $19 million increase in Superfund research will be relevant to the hazardous waste research program needs. As noted previously, however, Superfund research legislation has been separately authorized.

Committee action

The Committee authorized total fiscal year 1988 funding for the hazardous waste research program at $45,236,800, the Administration's requested level. As noted in the discussion on the hazardous waste minimization research program under Section 7(e), the Committee intends that the Administrator redirect $1,000,000 from research within this program to support a hazardous waste minimization research program.

For fiscal year 1989, the Committee has authorized funding of $48,151,700, a $2,914,900 increase above the fiscal year 1988 level. In addition to increasing the in-house portion of the program by 6.3 percent to provide for increased resources, the Committee directed an additional $2 million in extramural research funds to be used to increase the total funding for the hazardous waste minimization research program to $3 million.

SECTION 2(a)(5). PESTICIDES

Program description

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act require the regulation of pesticide use to avoid unreasonable adverse effects to public health and to the environment. The research program improves the understanding of how pesticides interact with human activities and the environment, to assure that their use minimizes damage from pests, while maximizing the protection of human food, health, and the environment. Objectives of the pesticides research program include the development and validation of test methods for FIFRA studies, health research on biological markers, dosimetry and extrapolation, ecological research (including transport, fate, and field validation), engineering research, exposure monitoring, research on biotechnology and microbial and biochemical pest control agents, and conducting studies on ecotoxicity and environmental risk assessment protocols.

Budget request

The fiscal year 1988 request for pesticides research was $13,190,200 and 115.6 workyears, an increase of 654,900 and 8 workyears from current fiscal year 1987 levels. The increases would be allocated to research efforts to reduce uncertainties in risk assessments, developing methodologies for non-cancer endpoints, new studies on biomarkers, health effects of genetically-engineered pesticides, and expanded research on the environmental effects of genetically engineered pesticides.

Committee action

The Committee authorized $13,690,200 for fiscal year 1988, an increase of $500,000 over the requested level. For fiscal year 1989, the Committee authorized a total of $14,596,300, an increase of $906,100 from the fiscal year 1988 authorized levels. In addition to increasing the in-house portion of the pesticides research program by 6.3 percent to provide for growth above inflation, the Committee has provided an additional $500,000 to support the development of an enhanced in-house biotechnology capability. (An additional $500,000 has been added to the fiscal year 1989 toxic substances research program, which also supports biotechnology research.)

EPA's total fiscal year 1988 biotechnology research program, funded from the pesticides and toxic substances research program, is $7,300,000. Only about one-fourth of that amount will be spent directly on the critical issue of predicting and assessing the environmental effects of the deliberate release of genetically-engineered organisms. The Committee remains concerned about the adequacy of this effort. Although EPA intends to regulate genetically-engineered organisms under FIFRA and TSCA, it is not adequately investing in the research it needs to conduct appropriate risk assessments of proposed environmental releases. As a result, there remain significant uncertainties about such effects, which in turn unduly delay decisions on applications for proposed releases. Such delays and regulatory uncertainty are imposing significant costs on the emerging biotechnology industry. As the Science Advisory

Board noted in its review of the fiscal year 1988 budget proposal, while EPA has made "modest beginnings" in addressing these research needs, the program still "does not effectively address these needs to a sufficient degree."

The Committee has added $500,000 to the fiscal year 1988 request and $1,000,000 to the fiscal year 1989 program specifically to improve EPA's in-house biotechnology program. The Committee is particularly concerned about the testimony it received that the conditions existing in EPA's Gulf Breeze, Florida, laboratory may jeopardize the high quality of EPA's biotechnology research. While the Gulf Breeze laboratory has been fortunate in attracting a highly-skilled and well-respected scientific staff, the facilities and equipment are in need of major improvements. At the present time, for example, EPA lacks the containment facilities that are necessary under the National Institute of Health's safety guidelines to conduct research on many genetically-engineered organisms. The Committee supports the biotechnology program at Gulf Breeze, and has specifically provided additional funding in fiscal year 1988 to carry out improvements at Gulf Breeze and to ensure continued high-quality research.

The Committee also notes its support for EPA's efforts to develop capabilities to conduct ecological risk assessments, an activity which also received favorable comments in a recent Science Advisory Board review.

The Committee has also directed EPA to conduct two studies relating to pesticides research, which are described in detail under Section 7, below.

SECTION 2(a)(6). RADIATION

Program description

The radiation research program provides the EPA's Office of Radiation Programs and other EPA, federal, regional, state and local officials with scientifically credible data, methods and assessments required to determine and control public exposure to radioactive materials in the environment. In particular, the program provides monitoring and quality assurance support to the Department of Energy (DOE) at DOE's Nevada Test Site and provides scientific data to support EPA's radon action plan.

Budget request

The Administration requested a total of $1,378,100 and 12.7 work-years for radiation research activities in fiscal year 1988, a decrease of $1,294,500 (48.4 percent) and 10.5 workyears from current fiscal year 1987 levels. The reduction came solely from EPA's radon mitigation demonstration program, which develops, tests and evaluates technologies which may be useful in reducing high levels of cancer-causing radon gas in homes. The budget request justified the reduction by stating that EPA had already devoted significant resources to the program and that DOE would be significantly expanding its research program.

Committee action

The Committee authorized $2,878,100 for radiation research activities in fiscal year 1988, an increase of $1,500,000 from the requested level. The Committee intends that $600,000 of the increase be allocated to in-house research and the remaining $900,000 to extramural research. For fiscal year 1989, the Committee authorized $2,952,400, an increase of $74,300, representing a 6.3 percent increase in the salaries and expense account to reflect slight growth above inflation.

Hearings before the Science, Space, and Technology's Subcommittee on Natural Resources, Agriculture Research and Environment have shown that residential radon contamination is one of the most serious public health threats in our nation. EPA has estimated that residential radon may cause up to 30,000 lung cancer deaths a year, and that over 8 million homes have excessive levels of radon.

To date, EPA's radon mitigation demonstration program has shown promising results, but EPA has not yet developed an array of techniques which can reliably and consistently reduce radon to safe levels in a variety of homes and geographic locations. As a recent Science Advisory Board review of EPA's radon mitigation research plans recently concluded, "the largest potential reduction of public health risk . . . would be achieved by demonstrating a number of low-cost mitigation techniques that have a high probability of success." The Science Advisory Board's review of the fiscal year 1988 budget proposal concluded that EPA "cannot achieve" that objective at the proposed level of funding.

While increased funds have been requested by DOE to expand its radon program in fiscal year 1988, DOE has testified that it does not intend to develop or demonstrate low-cost radon mitigation methods.

The Committee believes that the radon mitigation demonstration program is of high priority and has accordingly added $1.5 million to fiscal year 1988 request level to ensure that progress in this program continues unabated. The Committee also concurs with the Science Advisory Board that EPA should increase its efforts to address mitigation measures for new housing. In this regard, EPA should continue to work cooperatively with the Department of Energy in those areas of shared interest, including design and construction standards for new homes, the development of tools for public health officials to locate probable areas of high radon contamination.

SECTION 2(a)(7). INTERDISCIPLINARY

Program description

The interdisciplinary research program consists of those research programs which cut across traditional media lines. Specific programs include: (1) exploratory research, including a peer-reviewed, unsolicited grants program, the EPA's Centers of Excellence program, and the Visiting Scientists program; (2) uniform risk assessment program, which develops cross-cutting risk assessment methodologies and supports the intra-agency Risk Assessment Forum;

(3) technical information and liaison program, which provides information and technology transfer to state and local officials, and (4) the agency-wide quality assurance program.

Budget request

The fiscal year 1988 budget request for interdisciplinary research was $22,905,900 supported by 80.8 workyears, a decrease of $4,015,400 (18 percent) and 7.3 workyears. The reductions were due primarily to reduced funding for the peer-reviewed competitive grants program.

Committee action

The Committee authorized $23,905,900 for fiscal year 1988, an increase of $1,000,000 over the requested level. The Committee intends the $1,000,000 increase to restore in part the reductions for the grants programs. For fiscal year 1989, the Committee has authorized a total of $26,202,400, a $2,296,500 increase from the fiscal year 1988 authorized level. The fiscal year 1989 authorization reflects a 6.3 percent increase in the salaries and expenses account, and a $2,000,000 increase in the research and development account to increase funds available for the Centers and Grants program.

As in other recent budget requests, the Administration has proposed significant reductions in the exploratory research program. In light of the continuing decline in research resources available to the agency, the desire to transfer funds from long-term academic research to meet pressing research needs generated by immediate regulatory requirements is understandable. At the same time, as previously discussed, the Committee continues to be concerned that the failure to invest in basic, long-term environmental research will ultimately undermine EPA's ability to address efficiently and rationally its environmental problems and to anticipate emerging environmental issues in a timely fashion.

The Committee does not necessarily endorse the continuation of the present structure of the grants program. Other structures, such as those suggested recently by the Science Advisory Board, may also be effective in addressing the needs discussed above. The burden is on EPA, however, to undertake a thorough reassessment of its commitment to, and support of, long range research, including the grants program. A number of the provisions in the bill (discussed in more detail below) are intended to assist the Agency in this review. First, section 3 of the bill provides a specific mandate for the Agency to conduct and support basic research and requires the Agency to expend at least ten percent of its research funding on such research. Second, section 3(c) requires EPA to support a National Academy of Sciences review of federal funding of basic environmental and ecological research at our nation's universities. The study is necessary to provide objective information on the extent to which funding for such long-term basic research may be available from other federal sources. Third, section 5 requires the Administrator to recommend to Congress ways to improve the capability of the Office of Research and Development to identify emerging environmental issues.

SECTION 2(a)(8). TOXIC SUBSTANCES

Program description

The toxic substances research program supports the Office of Toxic Substances by providing the scientific tools and supporting information needed to implement the Toxic Substances Control Act (TSCA). Particular objectives of this program include the development and evaluation of test methods for TSCA studies, conducting studies on ecotoxicity and environmental risk assessment, developing data on structure activity relationships, and conducting health research, exposure monitoring, and ecological reseach on transport, fate, and field validation.

Budget request

The Administration requested $29,017,500 and 192.5 workyears for fiscal year 1988, a decrease of $2,077,900 (6.7 percent and 1.8 workyears from current fiscal year 1987 levels. The research proposal for fiscal year 1988 emphasized the development of methodologies to determine the health and environmental hazards associated with chemicals in the environment, and the development and evaluation of release and control methods for new and existing chemicals, including asbestos and other fibers. The reduction in funding reflected, according to EPA, the "phase-down of research in areas where the Agency has an extensive knowledge base."

Committee action

The Committee authorized total funding for fiscal year 1988 toxic substances research at $29,017,500, equivalent to the Administration's request. For fiscal year 1989, the Committee authorized $30,215,300, an increase of $1,197,800 over the fiscal year 1988 authorized levels. The fiscal year 1989 increase reflects a 6.3 percent overall increase to the in-house portion of the toxic substances research program. The Committee also added $500,000 over the general increase to support an enhanced in-house biotechnology capability, as discussed under Section 2(a)(5), above.

The Committee generally supports the priorities identified in the Administration's request, but believes, as explained previously, that EPA's in-house biotechnology program needs additional resources. The Committee also notes its strong support for efforts to develop structure activity relationships as a tool which may be able to provide important information about the behavior of new chemicals.

SECTION 2(a)(9). ENERGY RESEARCH

Program description

The energy research and development program provides the scientific information necessary to guide the development and use of energy resources in an environmentally acceptable manner. Research is conducted to understand the causes and effects of acid deposition and to expand the knowledge of control technologies, particularly the Limestone Injection Multistage Burner (LIMB).

Budget request

The agency requested a total of $58,866,600 and 82.6 workyears for fiscal year 1988, a decrease of $680,000 and 3 workyears from 1987 levels. Acid rain research would be funded at $55,331,100, roughly level with current fiscal year 1987 levels. The remaining funding supports the engineering research program, which is completing a commercial demonstration of LIMB control technology. The final stages of this project are expected to result in the completion of the commercial demonstration of LIMB on a wall-fired utility boiler.

Contrary to practices in years past, the Administration requested that funds be made available from the Department of Energy, rather than EPA, for funding of the final full-scale demonstration of the tangentially-fired LIMB. The Administration's budget request for DOE included a request for $7 million in fiscal year 1988 in the fossil energy program to be passed through to EPA for funding this demonstration.

Committee action

The Committee authorized total fiscal year 1988 funding for energy research activities at $55,866,600, a decrease of $3,000,000 from the Administration's request. Of the fiscal year 1988 authorization, no more than $52,331,100 shall be used for acid deposition research. For fiscal year 1989, the Committee authorized $56,216,900 for energy research, of which not more than $52,611,900 shall be used for acid deposition research. The increase of $350,300 in fiscal year 1989 from fiscal year 1988 levels represents a 6.3 percent increase in the salaries and expenses portion of this research activity.

The Committee redirected $3,000,000 in fiscal year 1988 from the acid rain research program to provide additional funding for areas, which, relative to the acid rain research program, were in need of additional funds. As described above, those areas include biotechnology, radon mitigation, and exploratory research. The Committee notes that in sharp contrast to most of EPA's research programs, the acid rain research program has grown dramaticlly over the last five years, from $13,070,700 in fiscal year 83 to $55,446,800 in fiscal year 1987, a 324 percent increase in four years. Since fiscal year 80, EPA has spent $195,830,000 on acid rain research. The proportion of the total research budget devoted to acid rain research has climbed from 2 percent in fiscal year 81 to 19 percent in the fiscal year 1988 budget request.

In addition, much of EPA's research on acid rain is conducted as part of the National Acid Precipitation Assessment Program (NAPAP), an inter-agency research program established by Congress as the entity which would provide Congress with authoritative reports on acid precipitation. The Committee notes that NAPAP has lagged seriously in its production of reports to Congress, indicating an inability to integrate the results of research already completed. For example, NAPAP has yet to produce the statutorily-required "mid-course" assessment, due in 1985.

The Committee strongly supports the EPA acid precipitation research program. Nevertheless, given the dramatic recent growth of

funding for acid precipitation research, and given the apparent lag in NAPAP's ability to use the information collected by EPA, the Committee believes that a modest reduction in the Administration's request is warranted and will not affect the flow of scientific information to the Agency or to Congress.

The Committee also notes its continued support for the completion of the full-scale demonstration of the tangentially-fired LIMB, which promises to be a cost-effective alternative to fuel switching or scrubbing for many utilities.

SECTION 2(a)(9). SUPERFUND

Program description

The Superfund research program conducts research and applies completed research and expertise to the clean-up of Superfund sites. Objectives of the research program include the provision of techniques and procedures for site and situation assessment, research, development and demonstration of alternative and innovative clean-up technologies, conducting health effects research, and provides technology transfer.

Budget request

The agency requested $58,812,000 and 85.6 workyears in fiscal year 1988, an increase of $20,130,100 from fiscal year 1987 levels. The increase is intended to cover the vastly expanded research authorities given to EPA in the Superfund Amendments and Reauthorization Act [SARA], passed in the 99th Congress. The Agency is requesting no funds in fiscal year 1988 for research to support the Leaking Underground Storage Tank Trust fund and intends to use carryover funds from fiscal year 1987 to continue research in this area.

Committee action

As noted previously, research for Superfund and Leaking Underground Storage Tank activities was previously authorized by SARA. Therefore, the Committee has not separately reauthorized such activities in H.R. 2253, and has included language to clarify that no provisions in the bill are intended to affect the authorities or authorization levels set out in SARA.

The Committee notes, as one of the Committees involved with the development of the research amendments in SARA, that it strongly supports for the significantly increased appropriations requested by the agency for Superfund research activities. The Committee is concerned, however, about the failure of the Agency to request funds for implementing section 31(d) of SARA, which requires the Administrator to make grants to universities to establish at least five hazardous substance research centers. The Committee believes that there is significant interest in the private sector for participating in the establishment and operation of such centers. As a result, establishing at least some of the centers at this time would appear to offer the potential of augmenting limited federal funding with private funding to advance research in this critical area.

SECTION 2(b). PROGRAM MANAGEMENT AND SUPPORT

Description of program

The program management activities associated with the Agency's research and development program include the overall direction and centralized management of ORD. It covers the salaries and other expenses of the Assistant Administrator for Research and Development and his principal deputies, and their immediate staff groups which assist them.

Program support covers the overhead services needed to support the research and development effort. Two types of support costs are included. The first consists of the share of the cost of agencywide support services which are prorated to the research and development appropriation account. These costs include common services provided to programs located in Washington, D.C., Research Triangle Park, North Carolina, and Cincinatti, Ohio, as well as certain agencywide charges such as facilities lease costs, communications and centralized ADP services. The second type of costs includes support services which are directly incurred in connection with the operation of ORD's laboratories. These direct cost consist mainly of laboratory and office services, utilities, building maintenance and similar housekeeping costs at research and development installations other than those located at Research Triangle Park and Cincinatti.

Budget request

The Agency requested $9,796,400 for management and support for fiscal year 1988, a $72,800 increase (less than 1 percent) from current fiscal year 1987 levels.

Committee action

The Committee endorsed the Administration's request for program management and support for fiscal year 1988. For fiscal year 1989, the Committee authorized $10,414,600, an increase of $618,200 from the authorized fiscal year 1988 level, which reflects a 6.3 percent increase to provide for 2 percent increase above inflation levels. The Committee believes that resources for EPA's in-house research program need to be increased in order to ensure high quality research.

SECTION 2 (c)

Section 2(c) authorizes the Administrator to provide payment for peer review of grant and cooperative agreement applications and contract proposals between the Agency and individuals, universities, and other research institutions. The provision would apply not only to fiscal years 1988 and 1989 but to subsequent years as well.

SECTION 2 (d)

Section 2(d) provides the Administrator with the authority to transfer funds authorized under this Act only between program categories listed in sections 2 (a) and (b). However, such transfers, when in excess of 10 percent of the funds authorized for particular research categories, are prohibited without first notifying and seek-

ing approval from appropriate Committees of the House and Senate. This provision will enhance the ability of the Committee to oversee shifts in program emphasis.

SECTION 2(e)

Section 2(e) prohibits the use of any funds authorized to be appropriated under this Act for any payment for a reduction-in-force or to close any field station, regional office, laboratory, or other research center, in any fiscal year, unless the Agency provides 30 days notice to the appropriate legislative and appropriations committees of the House and Senate of the reasons for the action and the impact of such action on the ability of the Agency to carry out the provisions of this Act. This section is not intended to apply to EPA-supported research centers under the Exploratory Research program.

The Committee took this action to ensure that adequate facilities, manpower, and resources exist in the Agency to carry out the program authorized and provisions contained in this Act. The Committee recognizes that reorganizations of resources and shifts in personnel may be required in response to budget constraints, program priorities, and other management needs. This section will enable the Committee to exercise its oversight responsibilities with respect to such mangement actions more effectively, to ensure that such actions do not jeopardize the ability of the Agency to carry out its duties under this Act.

SECTION 2(f)

Section 2(f) specifies that appropriations made pursuant to the authority provided by this Act may be obligated and expended by the Agency for such periods as may be allowed in Acts making such appropriations.

SECTION 2(g)

Section 2(g) prohibits the use of funds appropriated pursuant to this Act for activities other than those authorized by this Act. This section is intended to preserve a stable funding base for EPA research and development activities by prohibiting the use of research funds to make up for short falls or to fund new initiatives in other EPA programs. It is the Committee's intent that such short falls or new initiatives should be funded by other means, such as through supplemental appropriations, and not by depleting research funds which would jeopardize the Agency's ability to comply with the provisions of this Act.

SECTION 3. BASIC ENVIRONMENTAL RESEARCH

Section 3(a) directs the Administrator to conduct, and support at universities and other research centers, basic long-term research. Research to be conducted and supported would include that which would further the scientific understanding of environmental pollution and processes and their effects upon human health and the environment, or which improve scientific and engineering capabilities to identify, assess, and reduce existing and potential risks to

human health and the environment. The bill also directs that at least ten percent of funds appropriated for environmental research should be used to support or conduct such basic, long-range research, of which seventy percent shall be used to support such research at universities and other research centers.

The Committee has added this language to clarify that the EPA research program must include research which looks beyond its immediate regulatory needs. Testimony from witnesses at the hearing underscored the need for such research, and recommended that a certain portion of the research budget be specifically allocated to such research to ensure some balance between short-term and long-term research. The Committee agrees with this suggestion and has accordingly directed that at least 10 percent of the funds appropriated for EPA's research be spent on such basic long-term research. In addition, the Committee believes that much of this research can and should be conducted using the expertise existing in our nation's research community, and has accordingly directed that seventy percent of the funds spent on basic, long-range research be used to support research at universities and research centers. This provision is intended to give the Administrator some flexibility in implementing such long-term research; for example, not all of the funds for such research need be made available for the exploratory research program. However, the provisions are intended to make clear what constitutes a minimally acceptable level of funding for such research.

Section 3(b) requires the Administrator to report annually to Congress on the long-range research funded under section 3(a) in the previous year. This report is intended to provide Congress with a description of the specific research programs being conducted or supported by EPA which meet the requirements of section 3(a). The annual report will assist the Committee in conducting continuing oversight of the implementation of this section.

Section 3(c) requires EPA to support a study by the National Academy of Sciences on the adequacy of federal funding of environmental research at universities and research centers. In recent years, EPA budget submissions in support of long-range environmental research have been opposed by the Office of Management and Budget (OMB) partly because OMB believes that such research was adequately funded by other federal agencies, including the National Science Foundation, the Department of Defense, the Department of Interior and NASA. This view has been challenged by witnesses and by reports which have found only limited funding available to support basic environmental research in universities. Whether the federal government is making an adequate investment in the basic research needed to understand and manage environmental issues is an important question which deserves scrutiny by an independent and authoritative scientific group. Accordingly, the Committee has directed the Administrator to support a study by the National Academy of Sciences on this issue. Such a study should focus particularly on the type of research identified in section 3(a). Other than indicating that funds for the study should be taken from the funds authorized in Section 2 for environmental research, the Committee has not specified the source or amount of

funding to be given for such study, leaving this to the Administrator's discretion.

SECTION 4. REPEAL OF FIVE-YEAR RESEARCH REPORT

Section 4 repeals the requirement, first included in section 5 of the Environmental Research, Development and Demonstration Act of 1976, that the Administrator file an annual report setting out a five-year research plan. The Science Advisory Board has annually criticized the report as inadequate, terming a recent version "bankrupt of new ideas, innovation and a forward look." The Science Advisory Board, the Administrator, and the Office of Management and Budget, have recommended that this reporting requirement be repealed.

SECTION 5. REPORT ON EMERGING ENVIRONMENTAL PROBLEMS

Section 5 requires the Administrator to submit a report to Congress within 180 days after enactment with recommendations for improving EPA's capacity to identify and assess emerging environmental problems and research needs. In the past, the Committee has attempted in a number of ways to improve EPA's ability to look ahead in its research planning. The provision to require an annual five-year research plan, discussed above under Section 4, was one such example. In its recent report on the fiscal year 1988 research budget request, the Science Advisory Board recommended reviving an earlier publication, "Environmental Outlook", which linked environmental quality trends with socioeconomic information to provide forecasts of likely future environmental problems. Although such an analysis would appear to be essential for developing a capacity to identify and assess emerging environmental issues, the Committee believes it would be more useful at this time to solicit particular recommendations from the Administrator rather than requiring a new reporting requirement.

SECTION 6. SCIENCE ADVISORY BOARD

Section 6 sets out several new requirements for the Science Advisory Board, which was established under Section 8 of the Environmental Research, Development and Demonstration Authorization Act of 1978. The mandate of the Science Advisory Board is to provide "such scientific advice as may be requested" by the Administrator or by EPA's authorization Committees in Congress. By providing independent and authoritative advice on scientific matters, the Science Advisory Board fills an important institutional role in ensuring the quality of EPA's scientific work. The provisions set out in Section 6 are intended to enhance the role of the Science Advisory Board in assisting Congress in reviewing the adequacy of the resources and program management and direction for EPA's research program.

Beginning in fiscal year 1987, the Science Advisory Board initiated two steps to improve its independent research review role. These steps included a commitment to evaluate at least six individual research programs per fiscal year, and reviewing the President's proposed research budget for the coming fiscal year. Section 6 codifies these practices with several minor changes. Section 6(a) requires

the Science Advisory Board to review the budget request for EPA research activities each year and submit a report to Congress with evaluations and recommendations as "soon as practicable" after the submission of the President's budget to Congress. The Science Advisory Board has prepared such a report for the last two years, based on its continuing review of research programs. As the Science Advisory Board has gained more familiarity and experience with EPA's research programs, the annual budget reports have become highly informative and very useful documents. The Committee would encourage the Science Advisory Board, where possible, to provide an assessment of overall program priorities and recommendations for specific additional funding levels in future budget reports.

Section 6(b) requires the Science Advisory Board to select (in consultation with Congress) at least three areas of research activities for review and evaluation each year, and to report to Congress. The Administrator is required to provide a written response to the Science Advisory Board's findings. The bill modifies present practice slightly by requiring informal consultations with Congress in the process of selecting research areas for review. This informal consultation process will help ensure that the Science Advisory Board's reviews reflect Congressional areas of high interest.

Section 6(b) also modifies current practice by requiring the Administrator to submit to Congress a written response to evaluations and recommendations made pursuant to the Science Advisory Board's program reviews. While EPA staff at present often prepare a written response to the Science Advisory Board's reports, this provision will require that written responses be submitted to Congress within 60 days, ensuring a higher level of review within EPA and responsiveness to the Science Advisory Board's findings. Requiring a written response will also assist Congress in carrying out its oversight responsibilities with respect to the research programs.

SECTION 7. SPECIAL STUDIES

Section 7 requires the Administrator to conduct several research or research management studies of high interest to the Committee from the funds authorized for research. For the most part, the Committee has not specifically designated the specific source or level of funding for these studies and has left such choices to the Administrator.

SECTION 7(a). SCIENTIFIC STAFFING NEEDS ASSESSMENT

Section 7(a) requires EPA to conduct an assessment of its scientific staffing needs and to submit a report to Congress within 180 days after enactment. This requirement reflects the recommendation of the Science Advisory Board's report on the fiscal year 1988 research budget. As the Science Advisory Board stated in that report:

> EPA's ability to achieve its goal of building risk-based decision making depends upon its ability to maintain and enhance the technical skills of its personnel through training and other forms of professional development. This is particularly true of the research program where, as previ-

> ously noted, a workforce older than that found in other EPA offices needs opportunities for matching today's skills with tomorrow's problems.

Section 7(a) includes specific elements of the report which were recommended by the Science Advisory Board.

SECTION 7(b). GREAT LAKES AIR TOXICS RESEARCH

A recent report coordinated by the Sierra Club, "Toxic Air Pollution in the Great Lakes Basin: A Call for Action" (March, 1987), concluded that "airborne toxic deposition to the Great Lakes is one of the most critical long-term environmental problems facing the region." The report, which reviewed recent scientific data, found that twenty to twenty-five percent of all pollutants in the Great Lakes come from the air, and that the proportion is higher—eighty to ninety percent—in the more pristine reaches of the upper Great Lakes. Yet relatively little is known about the sources of these airborne toxic chemicals, many of which appear to come from distant regions. EPA's research program is geared primarily to direct water discharges of toxic chemicals. But as the International Joint Commission recently noted:

> [t]oxic substances move across and between air, water, land and living organisms. Agencies studying the problem of toxics, however, often cannot support work which falls outside their media-specific mandates * * *. A better understanding of the relative importance of the various pathways of toxic substances into the Great Lakes is needed * * *.

Section 7(b) requires EPA, in cooperation with other Federal agencies (including the National Oceanic and Atmospheric Administration), the Canadian Government, State agencies, and the International Joint Commission to initiate a research program to assess the contribution of airborne toxic chemicals to toxic pollution in the Great Lakes and to identify their sources. The provision also specifices certain toxic substances, presently found in the Great Lakes ecosystem, which are to be included in the study, and requires a report to Congress on the research program within one year.

SECTION 7(c). PESTICIDE RESISTANCE MANAGEMENT RESEARCH

A 1986 National Academy of Sciences report documented that the number of plant, insect and animal pests resistant to chemical pesticides is growing rapidly while the number of new pesticides have declined. There are no longer effective pesticides to control the Colorodo potato beetle on Long Island, the tobacco budworm and the diamonback moth. The consequences of growing pesticide resistance not only include higher costs, but possible environmental effects as well, as farmers respond with higher pesticide doses or turn to other pesticides that remain effective but which have less desirable environmental effects.

Section 7(c) directs the Administrator, in cooperation with the Secretary of the Department of Agriculture, to conduct a research study to be submitted to Congress on the environmental effects of

pesticide resistance and the potential of pesticide resistance management techniques to reduce such effects.

SECTION 7(d). DISINFECTANT EFFICACY RESEARCH

Under the Federal Insecticide, Fungicide and Rodenticide Act, EPA registers disinfectants for use in hospitals to destroy microbes that cause infections. Since EPA ceased testing the efficacy of disinfectants several years ago, concerns have grown that an increasing number of disinfectants are, in fact, ineffective based on label claims, EPA and industy have estimated that there would be a 20 percent failure rate if all registered disinfectants were tested.

Concerns have also been raised, however, about EPA's Pesticide Assessment Guidelines as a basis for testing for efficacy. Clearly, a first step in assuring a supply of effective hospital disinfectants requires agreement on what tests must be used to determine efficacy. Accordingly, section 7(d) requires EPA to establish a research program to develop testing protocols to determine the efficacy of disinfectants, and requires a report to Congress within twenty months.

SECTION 7(e). HAZARDOUS WASTE MINIMIZATION

The Committee has provided that $1,000,000 of the funds authorized for fiscal year 1988 and $3,000,000 of the funds authorized for fiscal year 1989 under this bill shall be used to support state grant programs to demonstrate promising hazardous waste minimization techniques and to disseminate information about successful approaches to the widest possible user audience.

The nation currently spends over $70 billion a year to control environmental pollution from the wastes we generate. Despite the fact that in 1984 Congress declared it to be national policy to reduce or eliminate the generation of hazardous wastes wherever reasonable and as expeditiously as possible, the Environmental Protection Agency is investing less than $1 million in research, development and demonstration activities designed to promote industry acceptance of waste reduction techniques. EPA is spending over $250 million a year designing programs which focus primarily on the treatment and disposal of wastes which have already been generated; in excess of $1 billion has been provided for Superfund waste site cleanup activities this fiscal year. A recent report by the Office of Technology Assessment is highly critical of EPA's lack of leadership in the crucial area of waste reduction at the source and suggests that a national goal of 10% annual reduction in the generation of hazardous wastes for each of the next five years might be attainable. EPA's October, 1986 report to Congress entitled "Minimization of Hazardous Waste" contains data which suggests industy could reduce its hazardous waste streams by 20–30 percent.

The Committee endorses the recommendation of the Science Advisory Board that the waste minimization component of the alternative technologies research program be significantly strengthened and directs the Administrator to prepare and submit to Congress a research strategy for the minimization of hazardous wastes. The strategy shall be submitted by October 1, 1987, and shall be designed to stimulate the development and acceptance by industry of

techniques that will result in the reduction of hazardous wastes at the source of their production.

The Committee intends the term "waste reduction" to exclude actions taken away from the waste generating activity such as the treatment of wastes after they are produced or actions which merely concentrate or dilute wastes. The bill also specified elements to be incorporated in the strategy, including programs which provide matching assistance to states to fund the demonstration and evaluation of a wide range of innovative source reduction techniques for small businesses in a variety of industries and the establishment of a clearinghouse for the dissemination of information on promising hazardous waste minimization approaches. The strategy shall provide funding levels and implementation timelines for each program proposed.

SECTION 7 (f). ENVIRONMENTAL EFFECTS RESEARCH OF RISING GREAT LAKES LEVELS

Section 7(f) requires EPA to submit a report of Congress within 180 days describing EPA's research program and any other relevant research which identifies the potential effects on nearby sewage treatment plants of the rise in the level of the Great Lakes and efforts to mitigate such problems.

SECTION 7 (g). AQUATIC WEEDS MANAGEMENT RESEARCH STUDY

Section 7(g) directs the Administrator, within 180 days after the enactment of the Act, to submit to Congress a report which assesses the state-of-the-art in water resource aquatic plant management models and determines the feasibility of updating EPA's existing model. The Committee notes that State and local planners continue to need assistance from the EPA in assessing various management options with respect to control of aquatic weeds. This provision requires EPA to review work it has performed in this area in previous years and determine the feasibility of updating this work.

V. Oversight Findings and Recommendations

Pursuant to Rule XI, Clause 2(l)(3), of the Rules of the House of Representatives, and under the authority of Rule X, Clause 2(b)(1) and Clause (3)(f), the results and findings of oversight activities considered by the Committee on Science, Space, and Technology have been adopted and are incorporated in the recommendations found in the present bill and report.

VI. Congressional Budget Act Information

This bill provides for new authorization rather than new budget authority and consequently the provisions of section 308(a) of the Congressional Budget Act of 1974 are not applicable.

VII. Congressional Budget Office Cost Estimate

Pursuant to Section 403 of the Congressional Budget Act of 1974 and Rule XI, Clause 2(l)(3) of the Rules of the House of Representatives, the report of the Congressional Budget Office follows:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, May 27, 1987.

Hon. ROBERT A. ROE,
Chairman, Committee on Science, Space, and Technology, House of Representatives, Rayburn House Office Building, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the attached cost estimate for H.R. 2355, the Environmental Research, Development, and Demonstration Authorization Act of 1987.

If you wish further details on this estimate, we will be pleased to provide them.

With best wishes,

Sincerely,

C.G. NUCKOLS
(For Edward M. Gramlich, Acting Director).

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill number: H.R. 2319.

2. Bill title: Environmental Research, Development, and Demonstration Authorization Act of 1987.

3. Bill status: As ordered reported by the House Committee on Science, Space, and Technology, May 14, 1987.

4. Bill purpose: This bill would authorize appropriations of $284.7 million for fiscal year 1988 and $296.7 million for 1989 for the Environmental Protection Agency's research, development, and demonstration activities in nine programs areas: air quality, water quality, drinking water, solid and hazardous waste (excluding Superfund), pesticides, radiation, toxic substances, energy, and interdisciplinary research. Additional appropriations of $9.8 million for 1988 and $10.4 million in 1989 would be authorized for related program management and support activities.

The 1988 authorization for EPA research and development represents a decrease of $10 million from the $304 million appropriated for 1987 and is equal to the President's 1988 budget request for such activities. The 1989 authorization level represents an average increase of about 4.3 percent above the 1988 level.

5. Estimated cost to the Federal Government:

[By fiscal years, in millions of dollars]

	1988	1989	1990	1991	1992
Authorization level	294	307			
Estimated outlays	144	233	127	62	27

The costs of this bill fall within budget function 300.

Basis of estimate: The authorization levels are those stated in the bill and are assumed to be appropriated in full for each fiscal year. Outlays have been estimated on the basis of historical spending patterns for these programs.

The bill would require the EPA to conduct several new research-related studies, to be funded under the specified authorization levels. In addition, the bill would repeal the requirement that the agency prepare an annual 5-year research report. The outlays shown in the table include the impact of these provisions.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: None.

9. Estimate prepared by: Deb Reis.

10. Estimate approved by: C.G. Nuckols, for James L. Blum, Assistant Director for Budget Analysis.

VIII. Oversight Findings and Recommendations, Committee on Government Operations

No findings or recommendations on oversight activity pursuant to Rule X, clause 2(b)(2), and Rule XI, clause 2(l)(3)(D), of the Rules of the House of Representatives have been submitted by the Committee on Government Operations for inclusion in this report.

IX. Effect of Legislation on Inflation

In accordance with Rule XI, clause 2(l)(4) of the Rules of the House of Representatives, this legislation is assessed to have no inflationary effect on prices and costs in the operation of the national economy.

X. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

SECTION 5 OF THE ENVIRONMENTAL RESEARCH, DEVELOPMENT AND DEMONSTRATION AUTHORIZATION ACT OF 1976 (PUBLIC LAW 94-475)

[Sec. 5. (A) The Administrator of the Environmental Protection Agency shall transmit to the Congress, within 6 months after the date of enactment of this Act, a comprehensive 5-year plan for environmental research, development and demonstration. This plan shall be appropriately revised annually, and such revisions shall be transmitted to the Congress no later than two weeks after the President submits his annual budget to the Congress in such year.]

THE ENVIRONMENTAL RESEARCH, DEVELOPMENT AND DEMONSTRATION AUTHORIZATION ACT OF 1978 (PUBLIC LAW 95-155)

[Sec. 4. The Administrator of the Environmental Protection Agency, in each annual revision of the five-year plan transmitted to the Congress under section 5 of Public Law 94-475, shall include budget projections for a "no-growth" budget, for a "moderate-growth" budget, and for a "high-growth" budget. In addition, each such annual revision shall include a detailed explanation of the relationship of each budget projection to the existing laws which au-

thorize the Administration's environmental research, development, and demonstration programs.]

* * * * * * *

SEC. 7. (a) The Administrator of the Environmental Protection Agency shall assure that the expenditure of any funds appropriated pursuant to this Act or any other provision of law for environmental research and development related to regulatory program activities shall be coordinated with and reflect the research needs and priorities of the program offices, as well as the overall reearch needs and priorities of the Agency[, including those defined in the five-year research plan].

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[SEC. 8.* * *

[(c) In addition to providing scientific advice when requested by the Administrator under subsection (a), the Board shall review and comment on the Administration's five-year plan for environmental research, development and demonstration provided for by section 5 of Public Law 94-475 and on each annual revision thereof. Such review and comment shall be transmitted to Congress by the Administrator, together with his comments thereon, at the time of the transmission to the Congress of the annual revisions involved.]

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SEC. 9. (a) The Administrator of the Environmental Protection Agency, in consultation and cooperation with the heads of other Federal agencies, shall take such actions on a continuing basis as may be necessary or appropriate—

(1) to identify environmental research, development, and demonstration activities, within and outside the Federal Government, which may need to be more effectively coordinated in order to minimize unnecessary duplication of programs, projects, and research facilities;

(2) to determine the steps which might be taken under existing law, by him and by the heads of such other agencies, to accomplish or promote such coordination, and to provide for or encourage the taking of such steps; and

(3) to determine the additional legislative actions which would be needed to assure such coordination to the maximum extent possible.

[The Administrator shall include in each annual revision of the five year plan provided for by section 5 of Public Law 94-475 a full and complete report on the actions taken and determinations made during the preceding year under this subsection, and may submit interim reports on such actions and determinations at such other times as he deems appropriate.]

XI. COMMITTEE RECOMMENDATIONS

A quorum being present, the Committee favorably reported the bill H.R. 2355 as amended by voice vote, and recommends its enactment.

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